

INHIBITION OF VITELLOGENESIS BY ALLATECTOMY IN THE RED COTTON BUG, *DYSDERCUS CINGULATUS* FABR. (INSECTA, HETEROPTERA, PYRRHOCORIDAE)

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Allatectomy in 24-36 Hr old *Dysdercus cingulatus* females resulted in complete inhibition of vitellogenesis.

It was reported that extirpation of pars intercerebralis neurosecretory cells (NSC) in the red cotton bug *Dysdercus cingulatus* inhibited vitellogenesis partially (JALAJA *et al.*, 1973). Inhibition was found to be complete when extirpation was carried out between 0-3 Hrs after emergence (JALAJA, 1974). Inhibition of vitellogenesis caused by extirpation of NSC could be reversed by implantation of fresh NSC (JALAJA, 1974). So it was proposed to find out if allatectomy had any inhibitory influence on vitellogenesis in this animal, as corpus allatum is widely known to stimulate vitellogenesis in most insects (ENGELMANN, 1970).

Animals used for this study were taken from the stock colony maintained in the laboratory. Females 24-36 Hrs after adult emergence were used for the experiments. The animals were anaesthetised in ether and affixed to Petri-dish by plasticine, head bent down exposing the neck membrane. A puncture on this membrane showed the translucent corpus allatum just behind the brain attached to the ventral wall of the anterior end of the aorta. The allatum was removed by fine sterile tweezers causing as little damage to the aorta as possible. A few crystals of a mixture of antibiotics, Penicillin-Streptomycin, containing phenylthiourea for prevention of tanning, were

applied to the wound, and head was released which automatically closed the wound. Sealing of the wound was not necessary. Sham-operated animals were kept as controls. A few normal males were also kept along with both sets of females to allow mating. The animals were fed on cotton seeds and reared in glass chimneys. Controls and experimentals, at least ten each, were sacrificed on days 3, 5 and 7 after the operation. The ovaries were dissected out in insect Ringer, fixed in BOUIN'S fluid and processed in the routine way. Sections were stained in HEIDENHAIN'S iron haematoxylin eosin. Success of allatectomy was confirmed by dissection and the data from those animals whose allata were not completely removed, was discarded.

It was found that as in the normal animals (JALAJA & PRABHU, 1971, 1976), in the control animals also the abdomen started swelling on the third day. But in those animals in which allatectomy was complete, the abdomen did not swell, an indication that vitellogenesis did not take place in them. None of these animals laid eggs till 7 days unlike controls all of which laid eggs by this time. Histological studies showed that in the control animals vitellogenesis already started on day 3 and eggs were laid on or before day 7. However in none of

the experimental animals in which allatectomy was complete yolk granules were seen till day 7. Oocytes also started resorbing.

It may be seen from this that the corpus allatum is necessary for vitellogenesis in *Dysdercus cingulatus*. Earlier observations revealed that NSC were essential for vitellogenesis in this animal (JALAJA, 1974). So it appears that both NSC and corpus allatum are essential for normal vitellogenesis in this animal. However, it is possible that only one of these endocrine centres is directly involved, and this centre is controlled by the other centre which exerts only a trophic function as in many insects (ENGELMANN, 1970). Unpublished observations (JALAJA, 1975) show that this is indeed the case.

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